Cutting Tool Technologies, Inc.

SPECIALTY INDEXABLE CUTTING TOOLS

Indexable Milling
Slotting Cutters
Holemaking Tools
Custom Tooling
Carbide Inserts

PRODUCT CATALOG

Statement

Thank you for your interest in our unique selection of indexable cutting tools. If you are new to us, we hope you will take a moment to see what we have to offer throughout our catalog. As always, we aim to earn your business by delivering superior quality products and great customer service. The following are products and services we are proud to offer:

Custom Tooling

With nearly 40 years of experience, we are well equipped to design, engineer, and manufacture high performance indexables for specific applications. We are ready to respond quickly to your custom tooling needs, whether it's a variation on a standard design or something more complex.

Made in the USA

All of our products are manufactured to exacting standards with precision tools and equipment. Our cutter bodies are made in Wilton, New Hampshire and we purchase all other components from U.S. companies. We do not compromise on the quality of our products.

Customer Service & Support

Contact us whenever you need assistance. We are here to help with pricing and availability, tool selection, application advice, operating guidelines, and technical support. Call (603) 654-2550. We are open Monday through Friday: 8:00 AM - 5:00 PM ET. If you prefer email, you may direct any questions to ctt@tellink.net. Or visit our website www.cuttingtooltech.com for the latest product information, demonstration videos, catalog downloads, and more.

How to Order

For your convenience, there are multiple ways to place an order: phone, email, online, fax, and through one of our many distributors. Orders ship Monday through Friday and can often ship same day if order is received by 3:00 PM ET. For additional information please visit www.cuttingtooltech.com.

Policies

Conditions of Sale

Designs, specifications, and prices of our products are subject to change without notice.

Terms of Payment

All invoices are Net 30 and subject to credit approval.

Delivery

All shipping charges are to be paid. Standard stock items can often ship same day if order received by 3:00 PM ET.

Returns

All returns must be authorized by CTT and assigned an RGA number. 15% restocking fee on all returns unless a replacement is ordered.

Guarantee

CTT guarantees our products to be free from defects in material and workmanship. If any defects are apparent, the item will be replaced at no charge. Cutting Tool Technologies, Inc accepts no liability for any direct, indirect, incidental or consequential damage to persons or equipment beyond the guarantee stated above. Cutting tools may break during use. Please use safety glasses and appropriate safety equipment at all times when operating machinery.

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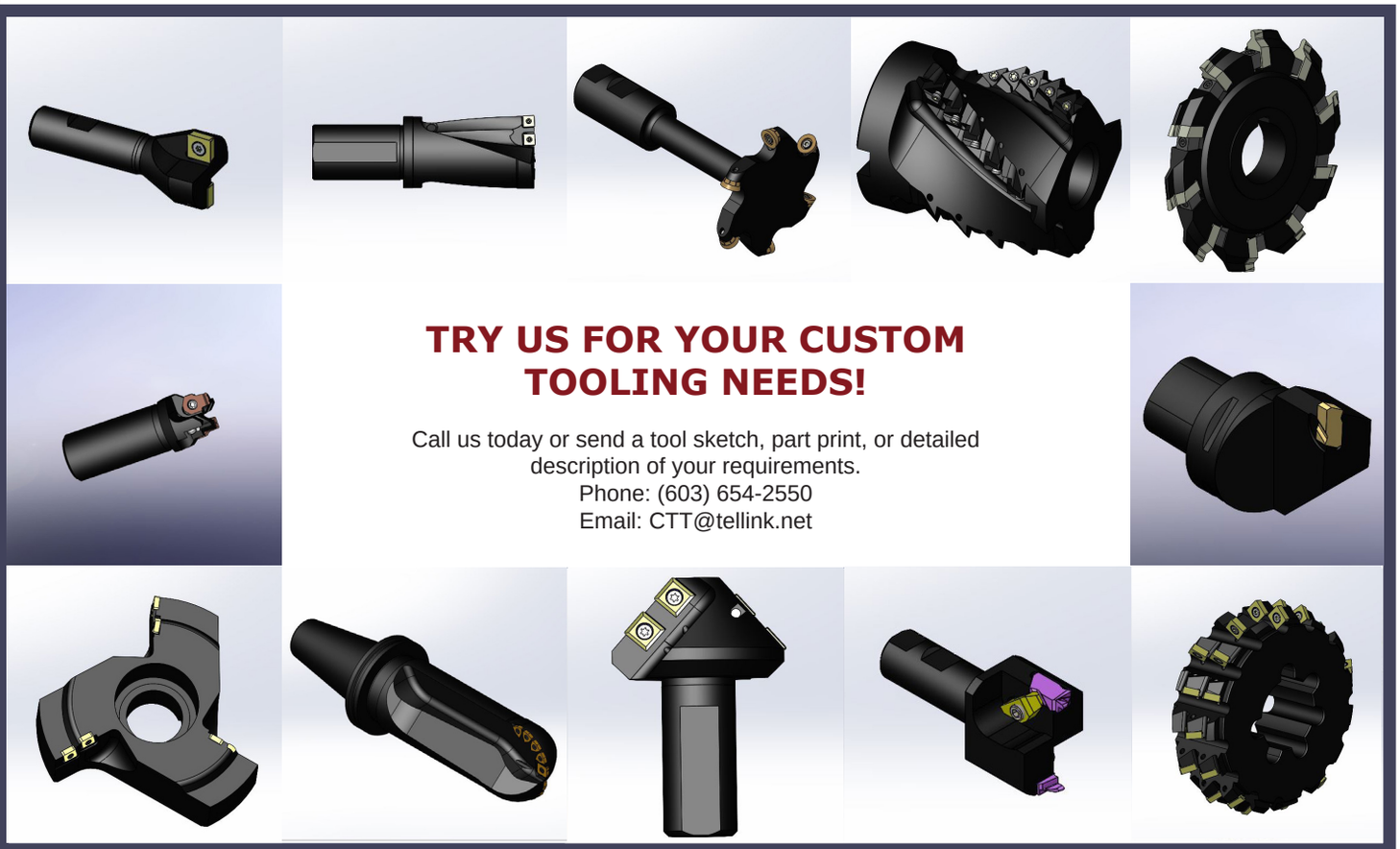
CUSTOM TOOLING

Cutting Tool Technologies has been a leading manufacturer of high quality custom indexable tooling for nearly 40 years and has earned a reputation for innovative design, consistent quality and outstanding customer service. Contact us, we will evaluate your needs and work with you to develop a solution that delivers on performance and value.



TRY US FOR YOUR CUSTOM TOOLING NEEDS!

Call us today or send a tool sketch, part print, or detailed description of your requirements.
Phone: (603) 654-2550
Email: CTT@tellink.net

Common Styles Include:

- Special milling cutter
- Special turning tools
- Integral shank tools (CAT, BT, etc.)
- Indexable drills & spade drills
- Counterbores & countersinks
- Step drill & milling cutters
- Back counterbore & chamfer tools
- Cartridge type boring bars
- Trepanning tools
- Hollow mills
- Slotting cutters
- Form tools
- Indexable broaches
- Custom Inserts

Below is a list of helpful information to provide when requesting a quote:

- What is the intended use of the tool to be quoted?
- What is the workpiece material and condition?
- What are the pertinent dimensions and tolerances required?
- What mounting type and size is required to interface with your machine?
- Is there a specific insert style that you would prefer?
- What quantity is required?
- Is this for a one-time job or is it recurring?
- Is there a required delivery date?

Your answer to these questions can help us find the most suitable, cost effective design that meets your requirements. As each project is different, there will likely be other details that need to be considered in the quoting process.

The simple wedge-lock design makes replacing worn or damaged inserts easy. Care must be taken to ensure that the insert pocket is clean and the insert is properly seated. After a used insert has been removed, clean the pocket and visually inspect for burrs or damage sustained during use. Cutters with insert pockets that do not allow proper seating must be repaired or replaced.

1. Insert from series 1215, 1312, 1500, or 1750
2. Clamping wedge
3. Differential screw

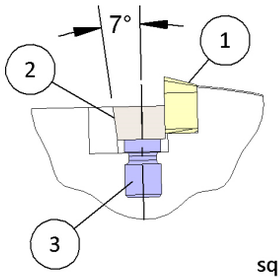
Mounting Instructions

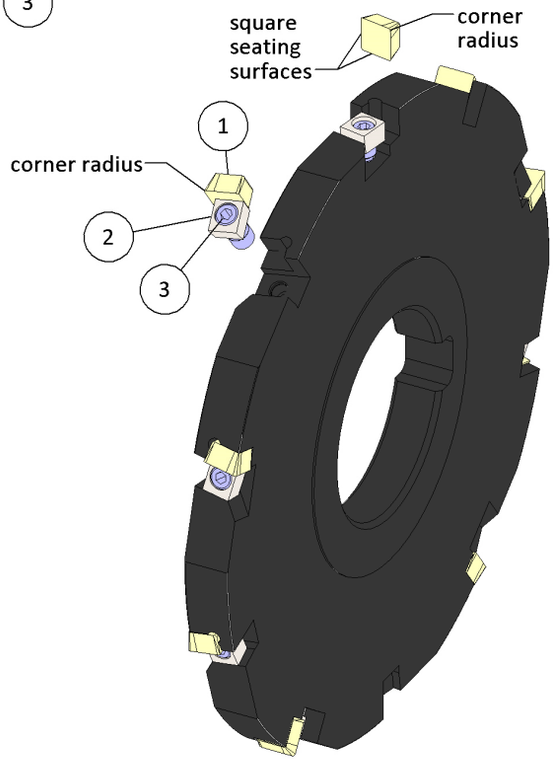
1. Find the corner radius on the insert and orient as shown. Slide the insert into a clean pocket. The wedge must be loose for the insert to fit in the pocket. If necessary, release the wedge using the differential screw until the insert can slide in.

2. Clamp the wedge lightly on the insert with the differential screw. While applying pressure on the insert toward the inside corner of the pocket, firmly tighten the screw.

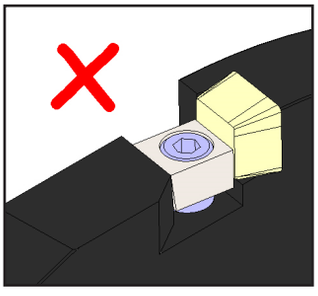
3. Check proper orientation of wedge and insert. If the wedge sits too high it can impede chip flow. Check orientation and reinstall. If it sits too low it can fail to secure the insert and must be replaced. Call tech support for assistance.

Assembly applies to the following items:
DSSC, DASC, W, KS, RA, RT, & TSC

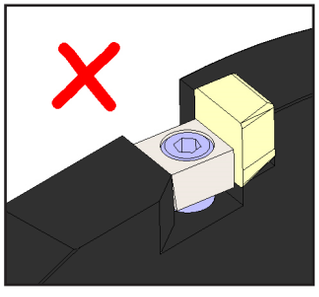




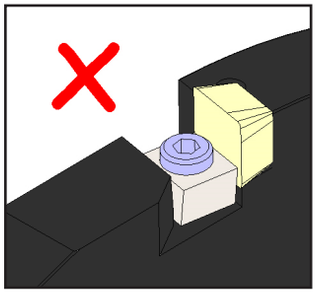
Please note:
Interchanging inserts between opposite hand stations (before excessive wear occurs) can often improve insert life.



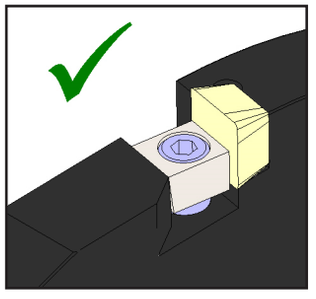
Insert is backwards with clearance in wrong direction



Insert is upside down



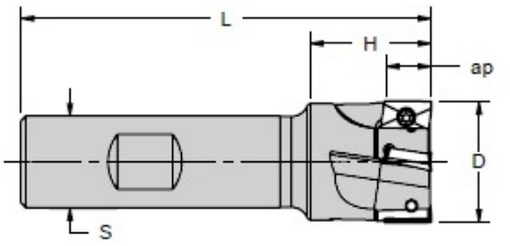
Insert is correct but the wedge is askew



Insert, wedge and screw are correctly installed

Z Series

- High-performance square shoulder milling with APKT inserts
- Hardened S7 tool steel bodies for extreme durability
- XL versions for extra reach and deep pocketing
- ZHM versions have helical flutes for heavy axial depths of cut
- Two indexes per insert
- Cutter bodies made in the USA

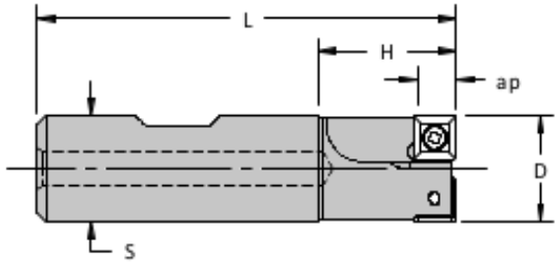


Cut Dia. D	Part Number	Dimensions (inches)			Max. DOC ap	No. of Inserts	Insert	Standard Components
		S	L	H				Screw
0.625	**ZEM-050**	0.625	3.25	1.03	0.38	2	APKT-1003	M25T6S217
0.750	**ZEM-070**	0.750	3.38	1.03	0.38	2		
0.750	**ZEM-080**	0.750	3.38	1.03	0.38	3		
0.880	**ZEM-090**	0.750	3.38	1.03	0.38	3		
1.000	**ZEM-100**	1.000	3.78	1.03	0.38	3		
1.000	**ZEM-110**	0.750	3.38	1.03	0.38	4		
1.125	**ZEM-120**	1.000	3.60	1.04	0.38	4		
1.250	**ZEM-130**	1.000	3.74	1.19	0.38	5		
1.500	**ZEM-140**	1.000	4.00	1.25	0.38	6		
EXTENDED LENGTH								
1.000	**ZEM-310XL**	1.000	5.51	3.23	0.38	3	APKT-1003	M25T6S217
1.250	**ZEM-320XL**	1.250	6.25	3.97	0.38	4		
1.500	**ZEM-330XL**	1.500	7.75	5.00	0.38	5		
HELICAL FLUTE								
0.750	**ZHM-410**	0.750	3.50	1.46	1.15	4	APKT-1003	M25T6S217
1.000	**ZHM-420**	1.000	4.25	1.96	1.50	8		
1.250	**ZHM-430**	1.250	4.50	2.21	1.77	10		
1.500	**ZHM-440**	1.250	5.00	2.40	2.05	12		

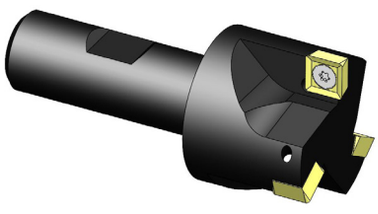
Size	Part Number	Length	Thickness	Corner Radius	Coatings				Image
					None	TiCN	TiN	TiAlN	
10 mm	APKT 100304 PDTR	0.409	0.138	0.016	○	○	○	•	
10 mm	APKT 1003 PDTR	0.409	0.138	0.031	○	○	•	•	

HS Series

- For square shoulder milling, facing, counterboring, and pocketing
- Good performance in low power machines
- Four indexes per insert
- Coolant through
- Cutter bodies made in the USA



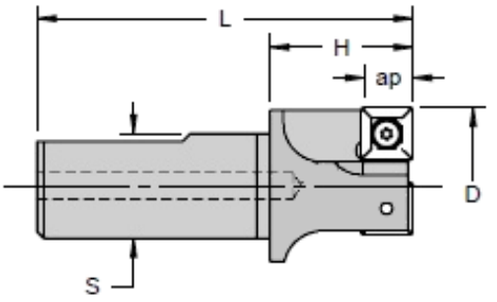
Cut Dia. D	Part Number	Dimensions (inches)			Max. DOC ap	No. of Inserts	Insert	Standard Components
		S	L	H				Screw
0.375	**HS-010**	0.375	2.25	0.625	0.23	1	SDEB-21.51	3-48 X 1/8
0.500	**HS-020**	0.500	2.62	0.625	0.22	1	SPEH-222	3-48 X 3/16
0.625	**HS-030**	0.625	3.12	0.875	0.22	2		
0.750	**HS-040**	0.750	3.03	1.000	0.28	2	SPEH-2.522	3-48 X 1/4
1.000	**HS-050**	0.750	3.03	1.000	0.28	3		
1.250	**HS-060**	0.750	3.28	1.250	0.34	3	SPEH-332	5-40 X 3/8
1.500	**HS-070**	0.750	3.28	1.250	0.34	3		
2.000	**HS-080**	0.750	3.28	1.250	0.34	4		



IC	Part Number	Thickness	Clearance Angle	Corner Radius	Coatings				Image
					None	TiCN	TiN	TiAlN	
0.250	SDEB-21.51	0.094	15°	0.015	•	○	•	○	
0.250	SPEH-222	0.125	11°	0.031	•	○	•	○	
0.313	SPEH-2.522	0.125	11°	0.031	•	○	•	○	
0.375	SPEH-332	0.187	11°	0.031	•	○	•	○	

DRM Series

- For multi-purpose milling operations including spot facing, counterboring, profiling, and pocket milling
- Center cutting
- Excellent performance in low power machines
- Perform multiple operations with a single tool
- Four indexes per insert
- Coolant through
- Cutter bodies made in the USA

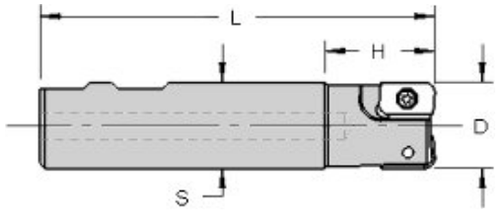


Cut Dia. D	Part Number	Dimensions (inches)			Max. DOC ap	No. of Inserts	Insert	Standard Components
		S	L	H				Screw
0.500	**DRM-010**	0.500	2.62	0.62	0.23	1	SDEB-21.51	3-48 X 9/64
0.625	**DRM-020**	0.750	3.00	1.00	0.28	1	SDEH-2.522	3-48 X 3/16
0.750	**DRM-030**	0.750	3.00	1.00	0.34	1	SPEH-322	4-40 X 1/4
0.875	**DRM-040**	0.750	3.00	1.00	0.28	2	SPEH-2.522	3-48 X 1/4
1.000	**DRM-050**	0.750	3.25	1.25	0.34	2	SPEH-322	4-40 X 1/4
1.125	**DRM-060**	1.000	3.50	1.25	0.34	2		
1.250	**DRM-070**	1.000	3.62	1.37	0.34	2		
1.375	**DRM-080**	1.000	3.62	1.37	0.47	2	SPEH-432	6-32 X 3/8
1.500	**DRM-090**	1.000	3.62	1.37	0.47	2		
1.625	**DRM-100**	1.000	3.75	1.50	0.47	2		
1.750	**DRM-110**	1.000	3.75	1.50	0.47	2		

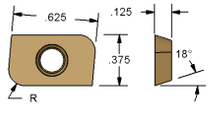
IC	Part Number	Thickness	Clearance Angle	Corner Radius	Coatings				Image
					None	TiCN	TiN	TiAlN	
0.250	SDEB-21.51	0.094	15°	0.015	○	○	●	○	
0.313	SDEH-2.522	0.125	15°	0.031	○	○	●	○	
0.313	SPEH-2.522	0.125	11°	0.031	●	○	●	○	
0.375	SPEH-322	0.125	11°	0.031	○	○	●	○	
0.500	SPEH-432	0.187	11°	0.031	○	○	●	●	

VEX Series

- Square shoulder milling with choice of corner radii
- Fully ground, positive rake inserts
- Two indexes per insert
- Coolant through
- Cutter bodies and inserts made in the USA

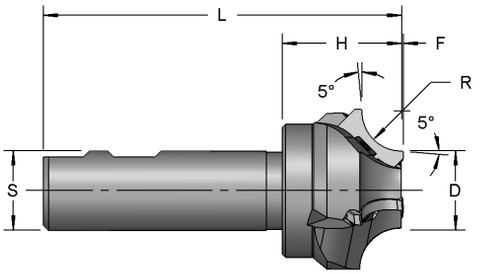


Cut Dia. D	Part Number						Dimensions (inches)			No. of Inserts	Standard Components
	.007-.060R	.070-.125R	.140-.190R	.200-.250R	.312R	.375R	S	L	H		Screw
0.625	**VEX-010**	**VEX-020**	**VEX-030**	**X**	**X**	**X**	0.625	3.38	1.00	1	M40T6S22
0.750	**VEX-080**	**VEX-090**	**VEX-100**	**VEX-110**	**VEX-120**	**VEX-130**	0.750	4.00	1.25	1	
1.000	**VEX-360**	**VEX-370**	**VEX-380**	**VEX-390**	**VEX-400**	**VEX-410**	0.750	4.50	1.25	2	
	VEX-500	**VEX-510**	**VEX-520**	**VEX-530**	**VEX-540**	**VEX-550**	1.000				
1.250	**VEX-640**	**VEX-650**	**VEX-660**	**VEX-670**	**VEX-680**	**VEX-690**	1.250	5.00	1.75	3	
1.500	**VEX-780**	**VEX-790**	**VEX-800**	**VEX-810**	**VEX-820**	**VEX-830**	1.250	5.00	1.75	3	

Part Number	IC	Length	Thickness	Corner Radius	Coatings				Image
					None	TiCN	TiN	TiAIN	
VX12007	0.375	0.625	0.125	0.007	●	○	●	○	
VX12015				0.015	●	○	●	○	
VX12020				0.020	●	○	●	○	
VX12030				0.030	●	○	●	○	
VX12060				0.060	●	○	●	○	
VX12070				0.070	●	○	●	○	
VX12080				0.080	●	○	●	○	
VX12090				0.090	●	○	●	○	
VX12120				0.120	●	○	●	○	
VX12125				0.125	●	○	●	○	
VX12140				0.140	●	○	●	○	
VX12150				0.150	●	○	●	○	
VX12156				0.156	●	○	●	○	
VX12160				0.160	●	○	●	○	
VX12170				0.170	●	○	●	○	
VX12190				0.190	●	○	●	○	
VX12250				0.250	●	○	●	○	
VX12312				0.312	●	○	●	○	
VX12375				0.375	●	○	●	○	

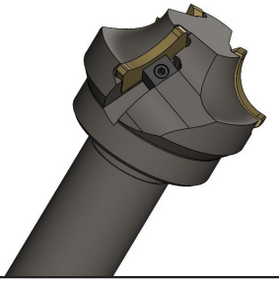
CVL Series
Large Radius - 3 Flute

- Fast and smooth corner rounding
- High positive rake
- Free cutting action for excellent surface finish
- 5° flares tangent to radius to avoid steps in workpiece
- End cutting
- Precision ground inserts
- Cutter bodies and inserts made in the USA



Radius R	Part Number	Dimensions (inches)					No. of Inserts	Insert	Standard Components	
		D	S	L	H	F			Wedge	Screw
.158 (4mm)	**CVL-030**	.766	1.00	4.23	1.23	.037	3	CVL12158	6W100	6DS343
.188		.750	1.00	4.25	1.25	.020		CVL12188		
.197 (5mm)	**CVL-040**	.778	1.00	4.21	1.21	.048	3	CVL12197	6W100	6DS343
.236 (6mm)		.760	1.00	4.24	1.24	.026		CVL12236		
.250		.750	1.00	4.25	1.25	.020		CVL12250		
.276 (7mm)	**CVL-050**	.768	1.00	4.22	1.22	.042	3	CVL12276	6W200	6DS343
.313		.750	1.00	4.25	1.25	.020		CVL12313		
.315 (8mm)	**CVL-060**	.777	1.00	4.20	1.20	.057	3	CVL12315	6W200	6DS343
.354 (9mm)		.750	1.00	4.23	1.23	.041		CVL12354		
.375		.750	1.00	4.25	1.25	.020		CVL12375		
.394 (10mm)	**CVL-070**	1.019	1.00	4.47	1.47	.051	3	CVL16394	8W210	8DS625
.433 (11mm)		1.000	1.00	4.50	1.50	.026		CVL16433		
.438		1.000	1.00	4.50	1.50	.020		CVL16438		
.472 (12mm)	**CVL-080**	1.015	1.00	4.48	1.48	.037	3	CVL16472	8W210	8DS625
.500		1.000	1.00	4.50	1.50	.020		CVL16500		
.512 (13mm)	**CVL-090**	1.023	1.00	4.59	1.59	.052	3	CVL16512	8W210	8DS625
.551 (14mm)		1.010	1.00	4.62	1.62	.023		CVL16551		
.563		1.000	1.00	4.63	1.63	.020		CVL16563		
.591 (15mm)	**CVL-100**	1.024	1.25	4.98	1.61	.034	3	CVL16591	8W210	8DS625
.625		1.000	1.25	5.00	1.63	.020		CVL16625		
.709 (18mm)	**CVL-120**	1.276	1.25	4.72	1.72	.039	3	CVL18709	8W210	8DS625
.750		1.250	1.25	4.75	1.75	.020		CVL18750		
1.000	**CVL-160**	1.250	1.25	4.88	2.25	.020	6	CVL12100	8W210	8DS625

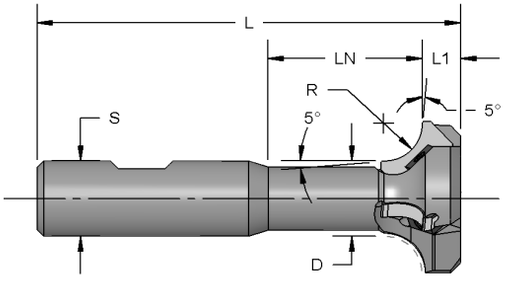
*Available in C2 uncoated and C2 TiAlN coated grades.



BACK CORNER ROUNDING END MILLS

CVLB Series
Large Radius - 3 Flute

- For milling a radius on the back side of a workpiece
- High positive rake
- Free cutting action for excellent surface finish
- 5° flares tangent to radius to avoid steps in workpiece
- Precision ground inserts
- Cutter bodies and inserts made in the USA



Radius R	Part Number	Dimensions (inches)					No. of Inserts	Insert	Standard Components	
		D	S	L	LN	L1			Wedge	Screw
.158 (4mm)	**CVLB-030**	.766	.75	4.13	1.50	.382	3	CVL12158	6W100	6DS343
.188		.750	.75	4.13	1.50	.375		CVL12188		
.197 (5mm)	**CVLB-040**	.778	.75	4.13	1.50	.389	3	CVL12197	6W100	6DS343
.236 (6mm)		.760	.75	4.13	1.50	.380		CVL12236		
.250		.750	.75	4.13	1.50	.375		CVL12250		
.276 (7mm)	**CVLB-050**	.768	.75	4.13	1.50	.384	3	CVL12276	6W200	6DS343
.313		.750	.75	4.13	1.50	.375		CVL12313		
.315 (8mm)	**CVLB-060**	.777	.75	4.13	1.50	.389	3	CVL12315	6W200	6DS343
.354 (9mm)		.750	.75	4.13	1.50	.375		CVL12354		
.375		.750	.75	4.13	1.50	.375		CVL12375		
.394 (10mm)	**CVLB-070**	1.019	1.00	5.00	2.00	.569	3	CVL16394	8W210	8DS625
.433 (11mm)		1.000	1.00	5.00	2.00	.560		CVL16433		
.438		1.000	1.00	5.00	2.00	.560		CVL16438		
.472 (12mm)	**CVLB-080**	1.015	1.00	5.00	2.00	.567	3	CVL16472	8W210	8DS625
.500		1.000	1.00	5.00	2.00	.560		CVL16500		

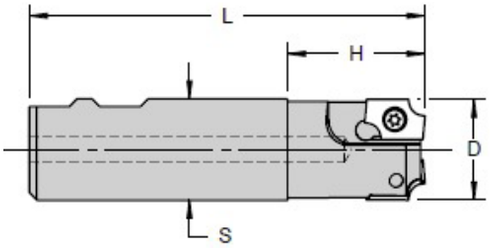
*Available in C2 uncoated and C2 TiAlN coated grades

Specials

- Full radius forms
- Shell mill mounts
- Back corner rounders
- Extended lengths
- Metric sizes
- Non-standard radii

CAV Series
Small Radius - Indexable

- Indexable corner rounding with screw-on inserts
- Positive rake
- Precision ground inserts
- Inserts are flared tangent to the radius to ensure a smooth form
- Two indexes per insert up to R.160
- Coolant through
- Cutter bodies and inserts made in the USA



CV12 insert, R.015 - R.120

Diameter D	Part Number					Dimensions (inches)			No. of Inserts	Standard Components
	0.015R	0.030R	0.060R	0.090R	0.120R	S	L	H		Screw
0.625	**CAV-010**	**CAV-020**	**CAV-030**	**CAV-040**	**CAV-050**	0.625	3.38	1.00	1	M40T6S22
0.750	**CAV-060**	**CAV-070**	**CAV-080**	**CAV-090**	**CAV-100**	0.750	4.00	1.25	1	
1.000	**CAV-190** **CAV-320**	**CAV-200** **CAV-330**	**CAV-210** **CAV-340**	**CAV-220** **CAV-350**	**CAV-230** **CAV-360**	0.750 1.000	4.50	1.25	2	
1.250	**CAV-450**	**CAV-460**	**CAV-470**	**CAV-480**	**CAV-490**	1.250	5.00	1.75	3	
1.500	**CAV-500**	**CAV-510**	**CAV-520**	**CAV-530**	**CAV-540**	1.250	5.00	1.75	3	

CV15 insert, R.090 - R.250

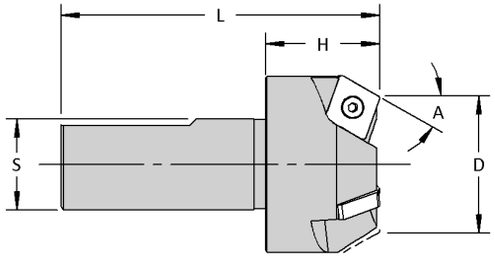
Diameter D	Part Number					Dimensions (inches)			No. of Inserts	Standard Components
	0.090R	0.120R	0.160R	0.190R	0.250R	S	L	H		Screw
1.000	**CAV-140** **CAV-270**	**CAV-150** **CAV-280**	**CAV-160** **CAV-290**	**CAV-170** **CAV-300**	**CAV-180** **CAV-310**	0.750 1.000	4.50	1.25	1	M50T6S3
1.250	**CAV-400**	**CAV-410**	**CAV-420**	**CAV-430**	**CAV-440**	1.250	5.00	1.75	2	

Note: Some cutter bodies are stocked as blanks and may need modification before shipping. Please allow extra processing time.

Size	Part Number	Radius	Height	Length	Thickness	Coatings				Image
						None	TiCN	TiN	TiAlN	
CV12	CV12015	0.015	0.375	0.625	0.125	●	○	●	○	
	CV12030	0.030				●	○	●	○	
	CV12060	0.060				●	○	●	○	
	CV12090	0.090				●	○	●	○	
	CV12120	0.120				●	○	●	○	
CV15	CV15090	0.090	0.500	0.750	0.156	●	○	●	○	
	CV15120	0.120				●	○	●	○	
	CV15160	0.160				●	○	●	○	
	CV15190	0.190				●	○	●	○	
	CV15250	0.250				●	○	●	○	

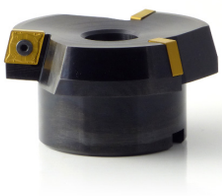
ECNM Series
Shank Type

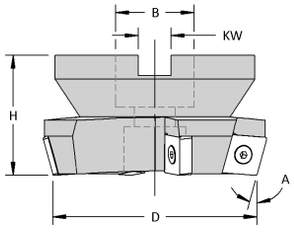
- Recycle your used CNMG inserts by milling with the 100 degree corners
- Excellent for weld prep, facing, and chamfering
- Four indexes per insert
- No clamps to impede chip flow
- Cutter bodies made in the USA



Lead Angle A	Part Number	Dimensions (inches)					Max. DOC ap	No. of Inserts	Insert	Standard Components
		OD	D	S	L	H				Screw
15°	**ECNM-410**	1.75	1.50	0.75	3.25	1.25	0.45	3	CNMG-432	10H8S48
30°	**ECNM-420**	1.97	1.50	0.75	3.25	1.25	0.40			
45°	**ECNM-430**	2.17	1.50	0.75	3.25	1.25	0.32			
15°	**ECNM-440**	1.75	1.50	1.00	3.50	1.25	0.45			
30°	**ECNM-450**	1.97	1.50	1.00	3.50	1.25	0.40			
45°	**ECNM-460**	2.17	1.50	1.00	3.50	1.25	0.32			
15°	**ECNM-610**	2.87	2.50	1.25	4.00	1.75	0.67		CNMG-643	25H8S56
30°	**ECNM-620**	3.21	2.50	1.25	4.00	1.75	0.59			
45°	**ECNM-630**	3.48	2.50	1.25	4.00	1.75	0.48			

SCNM Series
Shell Mill Type



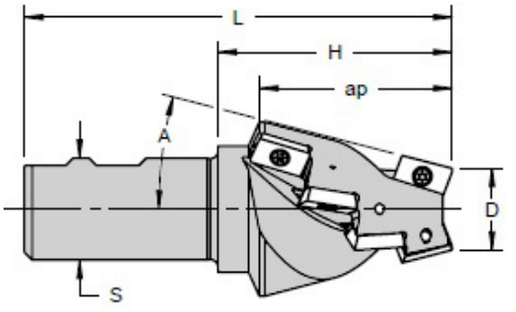


Lead Angle A	Part Number	Dimensions (inches)					Max. DOC ap	No. of Inserts	Insert	Standard Components
		OD	D	B	H	KW				Screw
15°	**SCNM-520**	3.24	3.00	1.00	1.75	0.38	0.45	3	CNMG-432	10H8S48
	SCNM-720	4.37	4.00	1.50	2.31	0.63	0.67	4	CNMG-643	25H8S56

IC	Part Number	Thickness	Clearance Angle	Corner Radius	Coatings				Image
					None	TiCN	TiN	TiAlN	
0.500	CNMG-432	0.188	0°	0.031	•	○	•	○	
0.625	CNMG-643	0.250	0°	0.047	•	○	•	○	

ASM Series

- Designed for roughing angles and milling chamfers and weld preps
- High positive geometry provides free cutting action
- End cutting
- Two indexes per insert
- Special sizes and angles can be quoted
- Cutter bodies made in the USA

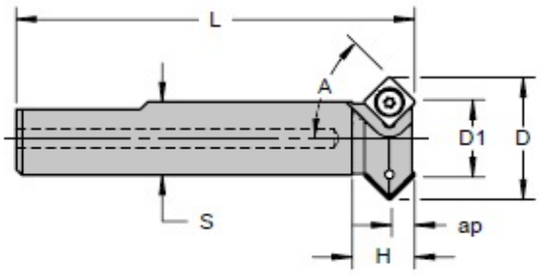


Angle A	Part Number	Dimensions (inches)						No. of inserts	No. of Flutes	Insert	Standard Components
		D	OD	S	L	H	ap				Screw
10 MM INSERT											
10°	**ASM-10**	1.00	1.51	1.00	4.38	2.00	1.44	8	2	APKT 1003	M25T6S21
15°	**ASM-15**	0.81	1.57	1.00	4.38	2.00	1.41				
20°	**ASM-20**	0.81	1.81	1.00	4.38	2.00	1.37				
22.5°	**ASM-22.5**	0.81	1.93	1.00	4.38	2.00	1.35				
25°	**ASM-25**	0.81	2.04	1.00	4.38	2.00	1.32				
30°	**ASM-30**	0.81	2.27	1.00	4.25	1.88	1.26				
32.5°	**ASM-32.5**	0.81	2.38	1.00	4.25	1.88	1.23				
41°	**ASM-41**	0.81	2.73	1.00	4.13	1.75	1.10				
45°	**ASM-45**	0.81	2.87	1.00	4.13	1.75	1.03				
60°	**ASM-60**	0.81	3.34	1.00	3.88	1.50	0.73				
16 MM INSERT											
10°	**ASML-110**	1.38	2.18	1.25	5.25	2.88	2.27	8	2	APKT 1604	M40T6S31
15°	**ASML-115**	1.00	2.20	1.25	5.25	2.88	2.23				
20°	**ASML-120**	1.00	2.58	1.25	5.19	2.82	2.17				
22.5°	**ASML-122.5**	1.00	2.77	1.25	5.19	2.82	2.13				
25°	**ASML-125**	1.00	2.95	1.25	5.13	2.75	2.09				
30°	**ASML-130**	1.00	3.31	1.25	5.13	2.75	2.00				
32.5°	**ASML-132.5**	1.00	3.48	1.25	5.13	2.75	1.95				
37.5°	**ASML-137.5**	1.00	3.79	1.25	5.00	2.63	1.81				
41°	**ASML-141**	1.00	4.03	1.25	4.94	2.57	1.74				
45°	**ASML-145**	1.00	4.27	1.25	4.88	2.50	1.63				
60°	**ASML-160**	1.00	5.00	1.25	4.38	2.00	1.15				

Size	Part Number	IC	Thickness	Corner Radius	Coatings				Image
					None	TiCN	TiN	TiAlN	
10 mm	APKT 1003 PDTR	0.264	0.137	0.019	○	○	●	●	
16 mm	APKT 1604 PDTR	0.375	0.187	0.031	○	○	○	●	

ANG Series

- For back chamfering, chamfering, v-grooving, and deburring
- Positive rake
- Four cutting edges
- Coolant through
- Cutter bodies made in the USA

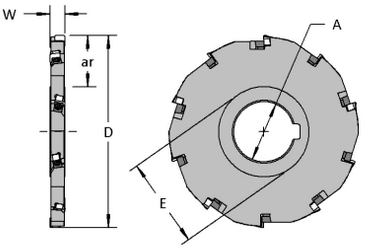


Angle A	Part Number	Dimensions (inches)						No. of Inserts	Insert	Standard Components
		D	D1	S	L	H	ap			Screw
45°	**ANG-010**	0.625	0.297	0.50	2.50	0.47	0.159	1	SDEB-21.51	3-48 X 3/16
45°	**ANG-020**	1.000	0.521	0.75	3.00	0.66	0.239	1	SPEH-322	4-40 X 3/8
45°	**ANG-030**	1.250	0.771	0.75	4.00	0.63	0.239	2		
45°	**ANG-040**	1.500	1.021	0.75	4.00	0.75	0.239	3		
45°	**ANG-050**	2.000	1.345	1.00	4.00	0.94	0.328	3	SPEH-432	6-32 X 3/8
15°	**ANG-080**	1.125	0.949	0.75	3.00	1.00	0.329	2	SPEH-322	4-40 X 1/4
30°	**ANG-090**	1.125	0.786	0.75	3.00	0.75	0.294	2		

IC	Part Number	Thickness	Clearance Angle	Corner Radius	Coatings				Image
					None	TiCN	TiN	TiAlN	
0.250	SDEB-21.51	0.094	15°	0.015	•	○	•	○	
0.375	SPEH-322	0.125	11°	0.031	•	○	•	○	
0.375	SPEH-322	0.125	11°	0.031	•	○	•	○	
0.500	SPEH-432	0.187	11°	0.031	•	○	•	○	

DASC Series
Arbor Type

- Disc type cutters for flat bottom slotting, shouldering, and back facing
- Positive geometry and staggered tooth design improves shearing action and decreases vibration
- Wiper flats create fine surface finishes
- Fixed width
- Special sizes can be quoted
- Cutter bodies and inserts made in the USA

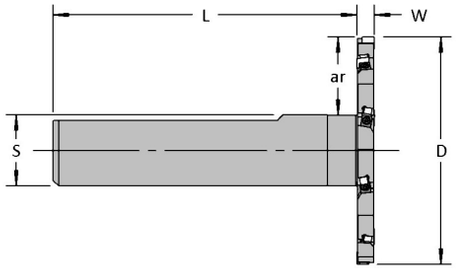


Diameter D	Part Number	Dimensions (inches)				No. of Inserts		Insert	Standard Components	
		W	A	E	ar	Total	Eff.		Wedge	Screw
3.00	**DASC-010**	0.250	1.00	1.50	0.72	8	4	1215	6W006	6DS343
	DASC-020	0.250	1.25	1.88	0.53					
	DASC-030	0.313	1.00	1.50	0.72	8	4	1215	6W006	6DS343
	DASC-040	0.313	1.25	1.88	0.53					
	DASC-050	0.375	1.00	1.50	0.72	8	4	1312	6W006	6DS343
	DASC-060	0.375	1.25	1.88	0.53					
	DASC-070	0.500	1.00	1.50	0.72	8	4	1312	6W006	6DS343
	DASC-080	0.500	1.25	1.88	0.53					
	DASC-090	0.750	1.00	1.50	0.72	8	4	1500	6W200	6DS343
	DASC-100	0.750	1.25	1.88	0.53					
4.00	**DASC-110**	0.250	1.00	1.50	1.22	10	5	1215	6W006	6DS343
	DASC-120	0.250	1.25	1.88	1.03					
	DASC-130	0.313	1.00	1.50	1.22	10	5	1215	6W006	6DS343
	DASC-140	0.313	1.25	1.88	1.03					
	DASC-150	0.375	1.00	1.50	1.22	10	5	1312	6W006	6DS343
	DASC-160	0.375	1.25	1.88	1.03					
	DASC-170	0.500	1.00	1.50	1.22	10	5	1312	6W006	6DS343
	DASC-180	0.500	1.25	1.88	1.03					
	DASC-190	0.750	1.00	1.50	1.22	10	5	1500	6W200	6DS343
	DASC-200	0.750	1.25	1.88	1.03					
6.00	**DASC-210**	0.250	1.25	1.88	2.03	14	7	1215	6W006	6DS343
	DASC-220	0.313	1.25	1.88	2.03	14	7	1215	6W006	6DS343
	DASC-230	0.375	1.25	1.88	2.03	14	7	1312	6W006	6DS343
	DASC-240	0.500	1.25	1.88	2.03	14	7	1312	6W006	6DS343
	DASC-250	0.750	1.25	1.88	2.03	14	7	1500	6W200	6DS343

Size	Part Number					Page
	0.007R	0.015R	0.030R	0.060R	0.125R	
1215	1215-007	1215-015	1215-030	1215-060	X	22
1312	X	1312-015	1312-030	1312-060	1312-125	
1500	X	1500-015	1500-030	1500-060	1500-125	

DSSC Series
Shank Type

- Excellent for flat-bottom slotting, shouldering, and back facing operations
- Positive geometry and staggered tooth design improves shearing action and decreases vibration
- Wiper flats create fine surface finishes
- One-piece body construction
- Special sizes can be quoted
- Cutter bodies and inserts made in the USA

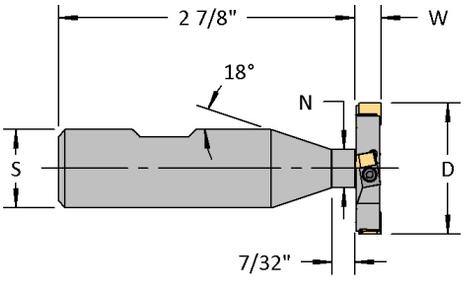


Diameter D	Part Number	Dimensions (inches)				No. of Inserts		Insert	Standard Components	
		W	S	L	ar	Total	Eff.		Wedge	Screw
1.00	**DSSC-010**	0.250	0.75	4.25	0.25	2	1	1215	6W006	6DS343
	DSSC-020	0.313	0.75	4.25	0.25	2	1	1215	6W006	6DS343
	DSSC-030	0.375	0.75	4.25	0.25	2	1	1215	6W006	6DS343
2.00	**DSSC-040**	0.250	1.00	5.25	0.50	6	3	1215	6W006	6DS343
	DSSC-050	0.313	1.00	5.25	0.50	6	3	1215	6W006	6DS343
	DSSC-060	0.375	1.00	5.25	0.50	6	3	1312	6W006	6DS343
	DSSC-070	0.375	1.25	6.25	0.37	6	3	1312	6W006	6DS343
	DSSC-080	0.500	1.00	5.25	0.50	6	3	1312	6W006	6DS343
	DSSC-090	0.500	1.25	6.25	0.37	6	3	1312	6W006	6DS343
3.00	**DSSC-100**	0.250	1.25	5.75	0.87	8	4	1215	6W006	6DS343
	DSSC-110	0.313	1.25	5.75	0.87	8	4	1215	6W006	6DS343
	DSSC-120	0.375	1.25	5.75	0.87	8	4	1312	6W006	6DS343
	DSSC-130	0.500	1.25	5.75	0.87	8	4	1312	6W006	6DS343
	DSSC-140	0.750	1.25	5.75	0.87	8	4	1500	6W200	6DS343
4.00	**DSSC-150**	0.250	1.25	5.25	1.37	10	5	1215	6W006	6DS343
	DSSC-160	0.313	1.25	5.25	1.37	10	5	1215	6W006	6DS343
	DSSC-170	0.375	1.25	5.25	1.37	10	5	1312	6W006	6DS343
	DSSC-180	0.500	1.25	5.25	1.37	10	5	1312	6W006	6DS343
	DSSC-190	0.750	1.25	5.25	1.37	10	5	1500	6W200	6DS343

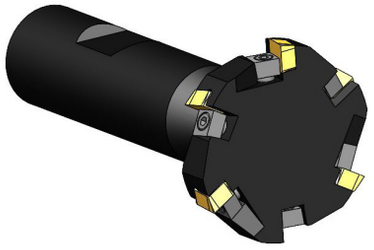
Size	Part Number					Page
	0.007R	0.015R	0.030R	0.060R	0.125R	
1215	1215-007	1215-015	1215-030	1215-060	X	22
1312	X	1312-015	1312-030	1312-060	1312-125	
1500	X	1500-015	1500-030	1500-060	1500-125	

W Series

- Sized to mill standard Woodruff keyseat but can be used for other light-duty slotting and milling operations
- Staggered tooth design and positive axial rake lowers cutting forces and aids in chip evacuation
- Wiper flats create superior side wall finish
- Special sizes can be quoted
- One insert fits entire series
- Cutter bodies and inserts made in the USA



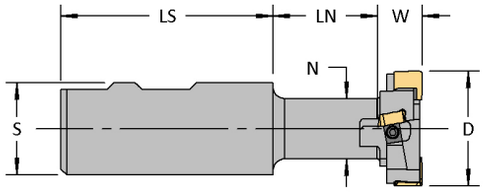
Diameter D	Part Number	Dimensions (inches)			Radial DOC Max.	No. of Inserts		Insert	Standard Components	
		W	S	N		Total	Eff.		Wedge	Screw
0.890	**W807**	0.2500	0.75	0.370	0.25	2	1	1215	6W006	6DS343
1.015	**W808**	0.2500	0.75	0.370	0.32	2	1			
	W1008	0.3125	0.75	0.430	0.29	2	1			
	W1208	0.3750	0.75	0.494	0.25	2	1			
1.140	**W809**	0.2500	0.75	0.370	0.38	4	2			
	W1009	0.3125	0.75	0.430	0.35	4	2			
1.265	**W810**	0.2500	0.75	0.370	0.44	4	2			
	W1010	0.3125	0.75	0.430	0.41	4	2			
	W1210	0.3750	0.75	0.494	0.38	4	2			
1.390	**W811**	0.2500	0.75	0.370	0.50	6	3			
	W1011	0.3125	0.75	0.430	0.47	6	3			
	W1211	0.3750	0.75	0.494	0.44	6	3			
1.515	**W812**	0.2500	0.75	0.370	0.57	6	3			
	W1012	0.3125	0.75	0.430	0.54	6	3			
	W1212	0.3750	0.75	0.494	0.50	6	3			



Size	Part Number					Page
	0.007R	0.015R	0.030R	0.060R	0.125R	
1215	1215-007	1215-015	1215-030	1215-060	X	22

TSC Series

- Sized to mill t-slots for standard bolt sizes
- Positive rake and staggered tooth design improves shearing action and decreases vibration
- Tool can be offset to increase the width of the slot
- Precision ground inserts with a choice of corner radii
- Cutter bodies and inserts made in the USA



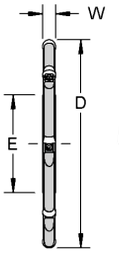
Bolt Size	Part Number	Dimensions (inches)						Radial DOC max.	No. of Inserts		Insert	Standard Components	
		D	W	S	LS	LN	N		Total	Eff.		Wedge	Screw
1/2"	**TSC-030**	0.969	0.391	0.75	2.06	0.98	0.53	0.21	4	2	1215	6W006	6DS343
5/8"	**TSC-040**	1.250	0.484	1.00	2.31	1.14	0.66	0.29	4	2	1312	6W006	6DS343
3/4"	**TSC-050**	1.469	0.625	1.00	2.31	1.50	0.78	0.34	4	2	1500	6W100	6DS343
1"	**TSC-060**	1.844	0.828	1.25	2.31	1.67	1.03	0.40	4	2	1500	6W100	6DS343
1-1/4"	**TSC-070**	2.219	1.094	1.25	2.31	1.97	1.22	0.49	4	2	1750	8W210	8DS625
1-1/2"	**TSC-080**	2.656	1.344	1.25	2.31	2.12	1.53	0.56	6	3	1750	8W210	8DS625

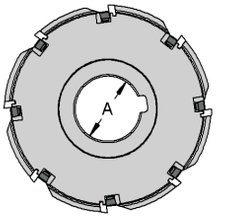
Note: A clearance slot must be milled for the neck of the tool before milling a t-slot

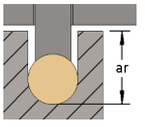
Size	Part Number					Page
	0.007R	0.015R	0.030R	0.060R	0.125R	
1215	1215-007	1215-015	1215-030	1215-060	X	22
1312	X	1312-015	1312-030	1312-060	1312-125	
1500	X	1500-015	1500-030	1500-060	1500-125	
1750	X	X	1750-030	1750-060	X	

RA Series
Arbor Type

- For milling slots with a full radius bottom
- Not recommended for facing, back facing, or contouring
- Integral pockets
- Positive hi-shear geometry
- Special sizes can be quoted
- Cutter bodies and inserts made in the USA





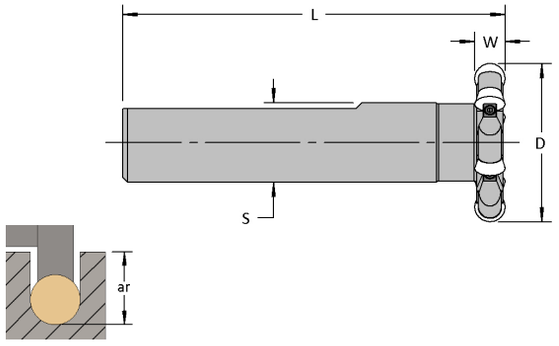


Max DOC ar	Part Number	Dimensions (inches)				No. of Inserts	Insert	Standard Components	
		W	D	A	E			Wedge	Screw
0.72	**RA-300**	0.125	3.00	1.00	1.50	6	RPC1(1.36)	X	1H15S27
1.03	**RA-310**	0.125	4.00	1.25	1.88	8			
0.72	**RA-320**	0.156	3.00	1.00	1.50	6	RDC1.25(1.5)	3W000	3DS312
1.03	**RA-330**	0.156	4.00	1.25	1.88	8			
1.53	**RA-340**	0.156	5.00	1.25	1.88	10			
0.72	**RA-350**	0.188	3.00	1.00	1.50	6	RDC1.5(1.5)	3W000	3DS312
1.03	**RA-360**	0.188	4.00	1.25	1.88	8			
1.53	**RA-370**	0.188	5.00	1.25	1.88	10			
2.03	**RA-380**	0.188	6.00	1.25	1.88	12			
0.72	**RA-390**	0.250	3.00	1.00	1.50	6	RDC21	6W006	6DS343
1.03	**RA-400**	0.250	4.00	1.25	1.88	8			
1.53	**RA-410**	0.250	5.00	1.25	1.88	10			
2.03	**RA-420**	0.250	6.00	1.25	1.88	12			
0.72	**RA-430**	0.375	3.00	1.00	1.50	6	RDC3(2.5)	6W006	6DS343
1.03	**RA-440**	0.375	4.00	1.25	1.88	8			
1.53	**RA-450**	0.375	5.00	1.25	1.88	10			
2.03	**RA-460**	0.375	6.00	1.25	1.88	12			

Size	Part Number	IC	Thickness	Clearance Angle	Coatings				Image
					None	TiCN	TiN	TiAlN	
1/8"	RPC1(1.36)	0.1250	0.085	11°	●	○	●	○	
5/32"	RDC1.25(1.5)	0.1562	0.094	15°	●	○	●	○	
3/16"	RDC1.5(1.5)	0.1875	0.094	15°	●	○	●	○	
1/4"	RDC21	0.2500	0.125	15°	●	●	●	●	
3/8"	RDC3(2.5)	0.3750	0.156	15°	●	●	●	●	

RT Series
Shank Type

- For milling slots with a full radius bottom
- Not recommended for facing, back facing, or contouring
- One-piece body construction
- Positive hi-shear geometry
- Special sizes can be quoted
- Cutter bodies and inserts made in the USA

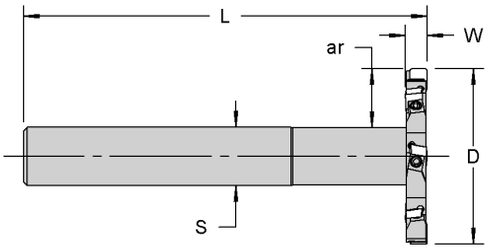


Max DOC ar	Part Number	Dimensions (inches)				No. of Inserts	Insert	Standard Components	
		W	D	S	L			Wedge	Screw
0.20	**RT-010**	0.125	1.00	0.75	4.50	4	RPC1(1.36)	X	1H15S27
0.50	**RT-020**	0.125	2.00	1.00	4.75	6			
0.87	**RT-030**	0.125	3.00	1.25	5.75	8			
0.20	**RT-040**	0.156	1.00	0.75	4.50	4	RDC1.25(1.5)	3W000	3DS312
0.50	**RT-050**	0.156	2.00	1.00	4.75	6			
0.87	**RT-060**	0.156	3.00	1.25	5.75	8			
0.37	**RT-070**	0.188	1.50	0.75	4.50	4	RDC1.5(1.5)	3W000	3DS312
0.50	**RT-080**	0.188	2.00	1.00	4.75	6			
0.87	**RT-090**	0.188	3.00	1.25	5.75	8			
0.37	**RT-100**	0.250	1.50	0.75	4.50	4	RDC21	6W006	6DS343
0.50	**RT-110**	0.250	2.00	1.00	4.75	6			
0.87	**RT-120**	0.250	3.00	1.25	5.75	8			
0.37	**RT-130**	0.313	1.50	0.75	4.50	4	RDC2.5(2.5)	6W006	6DS343
0.50	**RT-140**	0.313	2.00	1.00	4.75	6			
0.87	**RT-150**	0.313	3.00	1.25	5.75	8			
0.37	**RT-160**	0.375	1.50	0.75	4.50	4	RDC3(2.5)	6W006	6DS343
0..50	**RT-170**	0.375	2.00	1.00	4.75	6			
0.87	**RT-180**	0.375	3.00	1.25	5.75	8			

Size	Part Number	IC	Thickness	Clearance Angle	Coatings				Image
					None	TiCN	TiN	TiAlN	
1/8"	RPC1(1.36)	0.1250	0.085	11°	•	○	•	○	
5/32"	RDC1.25(1.5)	0.1562	0.094	15°	•	○	•	○	
3/16"	RDC1.5(1.5)	0.1875	0.094	15°	•	○	•	○	
1/4"	RDC21	0.2500	0.125	15°	•	•	•	•	
5/16"	RDC2.5(2.5)	0.3125	0.156	15°	•	•	•	•	
3/8"	RDC3(2.5)	0.3750	0.156	15°	•	•	•	•	

KS Series

- Designed for narrow width slotting, grooving, keyseat cutting, and back facing
- Staggered teeth and positive rakes
- Precision ground inserts with wiper flats
- Tool can be offset to increase the width of the slot
- Two indexes per insert
- Special sizes can be quoted
- Cutter bodies and inserts made in the USA

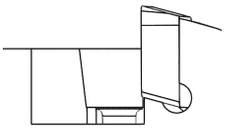


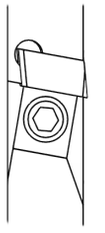
Diameter D	Part Number	Dimensions (inches)				No. of Inserts		Insert	Standard Components	
		W	S	L	ar	Total	Eff.		Wedge	Screw
0.88	**KS-010**	0.188	0.50	3.25	0.19	4	2	KDC-010	3W000	3DS312
	KS-020	0.250	0.50	3.25	0.19	4	2			
1.00	**KS-030**	0.188	0.50	3.50	0.25	4	2			
	KS-040	0.250	0.50	3.50	0.25	4	2			
1.25	**KS-050**	0.188	0.50	3.50	0.38	6	3			
	KS-060	0.250	0.50	3.50	0.38	6	3			
1.50	**KS-070**	0.188	0.50	3.50	0.50	8	4			
	KS-080	0.250	0.50	3.50	0.50	8	4			
2.00	**KS-090**	0.188	0.50	3.50	0.75	8	4			
	KS-100	0.250	0.50	3.50	0.75	8	4			

Size	Part Number	Thickness	Clearance Angle	Corner Radius	Coatings				Image
					None	TiCN	TiN	TiAlN	
KDC	KDC-010	0.078	15°	0.010	•	○	○	•	

Loading Inserts

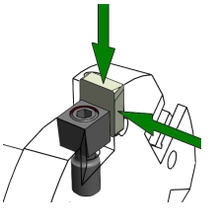
- Make sure all surfaces are clean.
- Insert the indexable insert into the pocket as shown in the diagram. The wedge must be loose for the insert to fit. If necessary, loosen the wedge using the differential screw.
- Before tightening the wedge, press on the insert to make sure that its bottom and sides are in contact with their seating surfaces.
- Continue to press on the insert while tightening the wedge screw.





Indexing Inserts

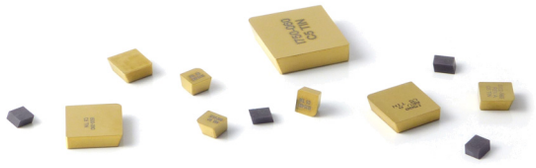
- Inserts can be indexed to opposite hand stations. They cannot be indexed in the same pocket.
- Index the inserts before excessive wear occurs. Excessive wear or chipping can cause poor positioning of the insert when indexing.



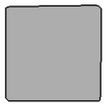
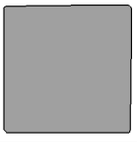
Slotting Inserts

1215, 1312, 1500 & 1750 Series

- Precision ground in the USA
- Multiple radii available
- Broad application range
- Wiper flat geometry for superior surface finish
- Special radius sizes can be quoted

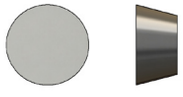


Slotting Inserts - For DASC, DSSC, W, TSC & KS Series

Size	Part Number	Corner Radius	IC	Thickness	Coatings				Image
					None	TiCN	TiN	TiAIN	
1215	1215-007	0.007	0.215	0.125	•	•	•	•	
	1215-015	0.015	0.215	0.125	•	•	•	•	
	1215-030	0.030	0.215	0.125	•	•	•	•	
	1215-060	0.060	0.215	0.125	•	•	•	•	
1312	1312-015	0.015	0.312	0.125	•	•	•	•	
	1312-030	0.030	0.312	0.125	•	•	•	•	
	1312-060	0.060	0.312	0.125	•	•	•	•	
	1312-125	0.125	0.312	0.125	•	•	•	•	
1500	1500-015	0.015	0.500	0.125	•	•	•	•	
	1500-030	0.030	0.500	0.125	•	•	•	•	
	1500-060	0.060	0.500	0.125	•	•	•	•	
	1500-125	0.125	0.500	0.125	•	•	•	•	
1750	1750-030	0.030	0.750	0.187	•	○	•	•	
	1750-060	0.060	0.750	0.187	•	○	•	•	
	1750-125	0.125	0.750	0.187	•	○	•	•	

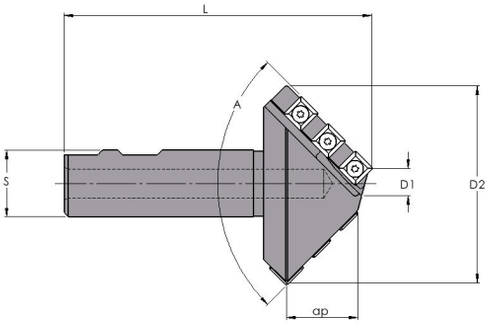
- Precision ground in the USA
- Broad application range
- Special sizes can be quoted

Round Inserts - For RA & RT Series

Size	Part Number	IC	Thickness	Clearance Angle	Coatings				Image
					None	TiCN	TiN	TiAIN	
1/8"	RPC1(1.36)	0.1250	0.085	11°	•	○	•	○	
5/32"	RDC1.25(1.5)	0.1562	0.094	15°	•	○	•	○	
3/16"	RDC1.5(1.5)	0.1875	0.094	15°	•	○	•	○	
1/4"	RDC21	0.2500	0.125	15°	•	•	•	•	
5/16"	RDC2.5(2.5)	0.3125	0.156	15°	•	•	•	•	
3/8"	RDC3(2.5)	0.3750	0.156	15°	•	•	•	•	

NLC & PLC Series

- For countersinking a wide range of hole sizes
- Choice of positive or negative rake
- Coolant through
- Cutter bodies made in the USA



Included Angle A	Part Number	Effective Diameter		Dimensions (inches)			No. of Inserts	Insert	Standard Components
		D1	D2	L	S	ap			Screw
NLC NEGATIVE RAKE									
60°	**6NLC-020**	0.50	2.84	4.63	1.000	2.01	8	SNMG-322	6H8S35
82°	**8NLC-020**	0.50	2.82	4.63	1.000	1.32	6		
90°	**9NLC-020**	0.50	2.98	4.63	1.000	1.23	6		
PLC POSITIVE RAKE									
60°	**6PLC-020**	0.50	2.82	4.63	1.000	2.01	8	SPEH-322	4-40 X 1/4
82°	**8PLC-020**	0.50	2.82	4.63	1.000	1.33	6		
90°	**9PLC-020**	0.50	2.96	4.63	1.000	1.23	6		

Cutter Selection

First choose the angle required, then decide whether positive or negative style inserts would best suit the application. Positive rake cutters offer freer cutting action and consume less horsepower but have weaker cutting edges. They generate lower cutting forces on the workpiece, reducing the tendency to chatter. Negative rake cutters require more horsepower and a more rigid setup. Double sided inserts provide economy and have the strength required for hard materials.

IC	Part Number	Thickness	Corner Radius	Clearance Angle	Coatings				Image
					None	TiCN	TiN	TiAlN	
0.375	SNMG-322	0.125	0.031	0°	•	○	•	○	
	SPEH-322			11°	•	○	•	○	

Negative rake vs. Positive rake:

Positive Rake

- Single sided inserts
- Low cutting forces
- Less chatter
- Weaker cutting edges
- Better for cutting soft or gummy materials

Negative rake

- Double sided inserts
- High edge strength
- Better for cutting harder materials
- Requires more horsepower
- Setup must be rigid

SINGLE FLUTE - 60°, 82°, 90° & 100°

NC & PC Series

- For countersinking and light chamfer milling
- Choice of positive or negative rake
- Coolant through
- Cutter bodies made in the USA

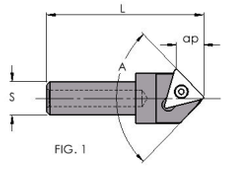


FIG. 1

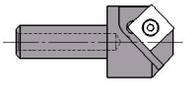


FIG. 2

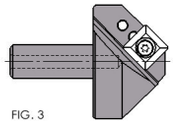


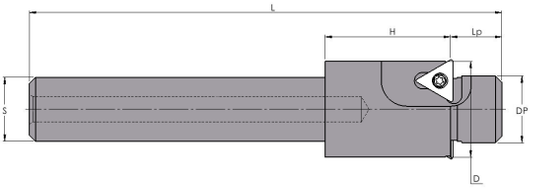
FIG. 3

Included Angle A	Part Number	Effective Diameter		Dimensions (inches)			No. of Inserts	Insert	Standard Components	Fig.
		Min.	Max.	L	S	ap			Screw	
NC NEGATIVE RAKE										
60°	**6NC-010**	0.25	0.75		0.50	0.43		TNMG-322	6H8S35	1
	6NC-020	0.50	0.93	2.38	0.50	0.37	1	SNMG-432	10H8S48	2
	6NC-030	1.25	1.68		0.75	0.37		SNMG-432	10H8S48	2
82°	**8NC-010**	0.25	0.82		0.50	0.33		TNMG-322	6H8S35	1
	8NC-020	0.50	1.05	2.38	0.50	0.32	1	SNMG-432	10H8S48	2
	8NC-030	1.25	1.80		0.75	0.32		SNMG-432	10H8S48	2
90°	**9NC-010**	0.25	0.87		0.50	0.31		TNMG-322	6H8S35	1
	9NC-020	0.50	1.10	2.38	0.50	0.30	1	SNMG-432	10H8S48	2
	9NC-030	1.25	1.85		0.75	0.30		SNMG-432	10H8S48	2
100°	**1NC-010**	0.25	1.06		0.50	0.28		TNMG-322	6H8S35	1
	1NC-020	0.50	1.15	2.38	0.50	0.27	1	SNMG-432	10H8S48	2
	1NC-030	1.25	1.90		0.75	0.27		SNMG-432	10H8S48	2
PC POSITIVE RAKE										
60°	**6PC-010**	0.25	0.78		0.50	0.46		TPGH-321		1
	6PC-020	0.50	0.93	2.38	0.50	0.37	1	SPGH-433	8H8S3	3
	6PC-030	1.25	1.68		0.75	0.37		SPGH-433		3
82°	**8PC-010**	0.25	0.94		0.50	0.39		TPGH-321		1
	8PC-020	0.50	1.75	2.38	0.50	0.31	1	SPGH-433	8H8S3	3
	8PC-030	1.25	2.50		0.75	0.31		SPGH-433		3
90°	**9PC-010**	0.25	1.00		0.50	0.38		TPGH-321		1
	9PC-020	0.50	1.75	2.38	0.50	0.29	1	SPGH-433	8H8S3	3
	9PC-030	1.25	2.50		0.75	0.29		SPGH-433		3
100°	**1PC-010**	0.25	1.06		0.50	0.38		TPGH-321		1
	1PC-020	0.50	1.75	2.38	0.50	0.27	1	SPGH-433	8H8S3	3
	1PC-030	1.25	2.50		0.75	0.27		SPGH-433		3

IC	Part Number	Thickness	Clearance Angle	Corner Radius	Coatings			
					None	TiCN	TiN	TiAlN
0.375	TNMG-322	0.125	0°	0.031	•	○	•	○
0.500	SNMG-432	0.187	0°	0.031	•	○	•	○
0.375	TPGH-321	0.125	11°	0.015	•	○	•	○
0.500	SPGH-433	0.187	11°	0.047	•	○	•	○

CSCB Series

- Integral pilot
- Three indexes per insert
- One insert fits all cutters
- No clamps to impede chip flow
- Coolant through
- Cutter bodies made in the USA



Cap Screw Size	Part Number	Dimensions (inches)						No. of Inserts	Insert	Standard Components
		D	Dp	S	L	Lp	H			Screw
3/8"	**CSCB-010**	0.594	0.406	0.500	4.38	0.50	1.25	1	TPGH-21.51	M25T5S217
7/16"	**CSCB-020**	0.688	0.468	0.500	4.44	0.50	1.25	1		
1/2"	**CSCB-030**	0.781	0.531	0.625	4.50	0.50	1.25	1		
5/8"	**CSCB-040**	0.969	0.656	0.625	4.63	0.50	1.25	2		
3/4"	**CSCB-050**	1.188	0.812	0.750	4.75	0.50	1.25	3		
7/8"	**CSCB-060**	1.375	0.937	0.750	4.88	0.50	1.25	3		
1"	**CSCB-070**	1.563	1.062	0.750	5.00	0.50	1.25	3		

IC	Part Number	Thickness	Clearance Angle	Corner Radius	Coatings				Image
					None	TiCN	TiN	TiAlN	
0.250	TPGH-21.51	0.094	11°	0.015	•	○	•	○	

Spare Parts

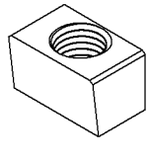
INSERT SCREWS			
Part Number	Length	Thread	Torx Drive
M25T6S20	0.20	M2.5 X 0.45	T9
M25T6S217	0.217		
M40T6S22	0.22	M4.0 X 0.70	T15
M40T6S31	0.31		
M50T6S3	0.30	M5.0 X 0.80	T20
M50T6S39	0.39		
8H8S3	0.28	8-32	T10

FLAT HEAD INSERT SCREWS			
Part Number	Length	Thread	Torx Drive
3-48 X 1/8	0.125	3-48	T8
3-48 X 9/64	0.141		
3-48 X 3/16	0.188		
3-48 X 1/4	0.250		
4-40 X 1/4	0.250	4-40	T9
4-40 X 3/8	0.375		
5-40 X 3/8	0.375	5-40	T10
6-32 X 3/8	0.375	6-32	T15

SPECIAL FLAT HEAD INSERT SCREWS			
Part Number	Length	Thread	Hex Drive
6H8S35	0.35	6-32	5/64
10H8S48	0.48	10-32	3/32
25H8S56	0.56	1/4-28	1/8

DIFFERENTIAL SCREWS			
Part Number	Length	Thread	Hex Drive
3DS312	0.31	3-48	.050
6DS343	0.35	6-40	.063
8DS625	0.48	10-32	.078

WEDGES			
Part Number	Length	Width	Height
3W000	0.122	0.137	0.122
6W006	0.172	0.197	0.125
6W100	0.250	0.197	0.187
6W200	0.312	0.197	0.187
8W210	0.312	0.224	0.250



Speeds & Feeds

This chart provides starting parameters for calculating speeds and feeds. Actual feeds and speeds will depend on many variables including machine tool condition, rigidity, workpiece size and shape, tool extension, depth of cut, etc. If you have questions regarding a specific application please contact us.

Workpiece Material			Examples	Hardness HB	Cutting Speed (SFM)				Feed (IPT)
					Uncoated	TiN	TiCN	TiAlN	
Steel	Carbon steels <.25% C	Annealed	10xx, 11xx, 12xx, 12Lxx, 15xx	125	375-480	485-620	525-670	560-740	.003-.008
	>=0.25% C			190	280-360	365-470	390-500	490-660	.003-.008
	>=0.55% C			250	230-300	305-390	320-420	340-460	.003-.008
	>=0.25% C	Hardened	10xx, 15xx	250	–	300-350	340-430	390-520	.002-.006
	>=0.55% C			300	–	250-320	270-350	330-430	.002-.006
	Alloyed steels	Annealed	41xx, 43xx, 86xx	175	–	340-430	360-460	460-610	.002-.006
		Hardened	41xx, 43xx, 86xx	300	–	280-365	300-390	360-490	.002-.006
				350	–	245-315	270-340	340-460	.002-.006
	Tool & die steels	Annealed	A2, D2, H13, O1, S7	200	–	215-280	230-330	340-460	.002-.006
Stainless	Ferritic/Martensitic	Annealed	416, 420F, 430F	200	240-310	310-390	340-430	420-540	.002-.005
		Hardened	403, 410, 416	330	–	200-260	220-280	270-350	.002-.005
		PH-hardened	15-5 Ph, 17-4 Ph	330	–	180-230	200-250	240-315	.002-.005
	Austenitic	Annealed	304, 316, 321	180	160-215	–	220-300	280-380	.002-.004
Cast Iron	Gray	Pearlitic/ferritic	Class 20, 25, 30	180	225-285	–	315-400	460-620	.005-.010
		Pearlitic	Class 45, 50, 60	260	185-245	–	260-340	360-490	.005-.010
	Ductile	Ferritic	60-40-18, 80-55-06	160	420-450	550-575	600-630	460-620	.003-.008
		Pearlitic	100-70-03	250	240-310	310-400	340-430	390-520	.003-.008
Hi-temp	Titanium alloys	α+β alloys	Ti-6Al-4V		105-180	–	–	180-315	.002-.004
	High temp alloys		Inconel, Monel, Waspaloy		50-90	–	–	70-130	.002-.004
NF	Aluminum	Wrought	20xx, 50xx, 60xx, 70xx		1400-2100	–	–	–	.004-.006
	Brass, bronze, copper				780-900	–	1100-1300	–	.003-.005

General Operating Guidelines

Chip Load: Cut with an adequate chip load. Light chip loads can cause inserts to rub, rather than cut causing chatter and premature wear. Light radial cuts may require higher advances per tooth to counteract chip thinning.

Feed Rate: Reduce feed rate by 50% when entering and exiting a cut to reduce the shock of the interrupted cut.

Effective Cutting Edges: When calculating feed rate, use the effective number of inserts specified for the cutter. For staggered tooth slotting, this is 1/2 the total number of inserts.

Effective Cutter Diameter: Use an Effective Cutter Diameter when calculating RPM for tools with varying diameters like angle mills, countersinks, and corner rounding tools. Effective Cutter Diameter = (Major Diameter + Minor Diameter) divided by 2.

Cut Direction: Climb milling is recommended in most applications. Conventional milling may be necessary in older machines to minimize backlash. It can also extend insert life in sandy, scaly, welded or work hardened material.

Staggered Tooth Slotting:

- To calculate a starting radial depth of cut, multiply the cutter diameter by 0.10.
- If the cutter is engaged on both sides (as in t-slotting) reduce SFM to 75% of posted values and reduce chip loads to 50% of posted values.

Plunge Milling: When plunge milling, reduce the cutting data by 30%.

Speed Adjustments

Use lower end speeds when:	Use higher end speeds when:
Cutting harder materials	Cutting softer materials
Taking heavy cuts	Taking light cuts
Insert wear is a problem	Productivity is too low
	Finish is poor

Feed Adjustments

Use lower end speeds when:	Use higher end speeds when:
Fixturing or part is frail	Fixturing & part are sturdy
Tool overhang ratio is high	Tool overhang ratio is low
Narrow width slotting	Using wider, heavier cutter
Insert chipping occurs	Finish is not important
Finishing	Taking light radial cuts
Deep slotting	

Grade Descriptions & Selection

Coatings add wear resistance and lubricity to the cutting edge, providing longer insert life and increased productivity through higher speeds and feeds. Choose the class and coating that best suits your application's material, or contact us for a recommendation.

Grade Descriptions

Class	Coating	Description	Workpiece Materials
C1/C2	none	Unalloyed micrograin with an excellent combination of toughness and wear resistance.	Cast iron, aluminum, non-ferrous alloys, high-temp alloys
C1/C2	TiCN	Tough, unalloyed micrograin with a PVD TiCN coating for enhanced wear resistance in abrasive and adhesive materials. Low heat resistance.	Moderate to machine steel, stainless, and abrasive materials like cast iron and high silicon aluminum alloys
C2/C6	TiAlN	Tough, unalloyed micrograin substrate with a PVD TiAlN coating. Maintains hardness and improves productivity in high heat applications.	Steel, stainless, cast iron, high temperature alloys
C5	TiN	Tough, alloyed substrate with PVD TiN coating. For general purpose machining of ferrous materials at low to medium speeds.	Easy and moderate to machine ferrous materials
C5/C6	TiAlN	Tough, alloyed substrate with PVD TiAlN coating. First choice for moderate to difficult steels and hardened stainless.	Moderate and difficult to machine steel, 400-series stainless

Grade Selection

	Workpiece Material		Material Examples	Grades				
				C1/C2	C1/C2 TiCN	C2/C6 TiAlN	C5 TiN	C5/C6 TiAlN
Steel	Carbon steels >=0.25% C	Annealed	10xx, 11xx, 12xx, 12Lxx, 15xx	○	○	○	◆	○
		Hardened	10xx, 15xx	–	○	○	○	◆
	Alloyed steels	Annealed	41xx, 43xx, 86xx	–	○	○	○	◆
		Hardened	41xx, 43xx, 86xx	–	○	○	○	◆
	Tool & die steels	Annealed	A2, D2, H13, O1, S7	–	○	○	○	◆
Stainless	Ferritic/Martensitic	Annealed	416, 420F, 430F	–	○	○	○	◆
		Hardened	403, 410, 416, 17-4 PH	–	–	○	○	◆
	Austenitic	Annealed	304, 316, 321	○	○	◆	–	–
CI	Gray	Pearlitic/ferritic	Class 20, 25, 30, 45, 50, 60	○	○	◆	–	–
	Ductile	Ferritic/pearlitic	60-40-18, 80-55-06, 100-70-03	○	○	◆	–	–
Hi-temp	Titanium alloys	α+β alloys	Ti-6Al-4V	◆	–	○	–	–
	High temp alloys		Inconel; Monel; Waspaloy	◆	–	○	–	–
NF	Aluminum	Wrought	20xx; 50xx; 60xx; 70xx	◆	○	–	–	–
	Brass, bronze, copper			○	◆	–	–	–

◆ first choice

○ alternate choice

The above grades and coatings are suitable for a wide range of materials and operating conditions. Other grades and coatings that are not listed in this catalog are available by request and may offer enhanced productivity in certain applications.

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Terms of Payment: Credit terms, if approved, are 30 days from date of invoice. All orders will be shipped C.O.D or pre-paid with credit or debit until open account terms have been extended.

Orders are subject to a minimum charge of $25.00.

Credit/Debit Cards: Visa, MasterCard, American Express, or Discover may be used when placing an order. For your protection, credit card information must be provided with each order.

Prices & Product Info: Prices are in US dollars. All listings, pricing, availability and specifications are subject to change at any time without notice. Pricing, photographic and typographical errors are subject to correction at any time.

Order Cancellation: Orders for our standard catalog items can be canceled at no charge if the tools have not been shipped. Tools that have been made as a special or altered in any way cannot be canceled.

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	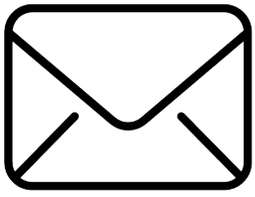	

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